Proportional pressure regulator VPPI

Characteristics

At a glance

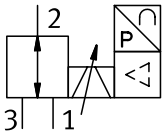
Special characteristics:
- Three predefined regulator presets, as well as a custom preset can be selected
- Low noise
- Flexible
- Extremely dynamic up to 30 Hz
- The max. frequency of 30 Hz protects the system
- Precise and stable: the powerful moving coil actuator also ensures that setpoint value changes are quick, easy and precise
- Various pressure ranges
- Pressure regulation range: -0.1 ... 1.2 MPa

PWM operation: the VPPI recognises PWM signals generated by any machine controller and adjusts automatically
- Bluetooth interface available

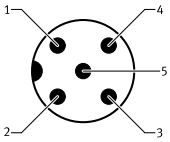
Function:
- The valve VPPI is a directly actuated proportional pressure regulator that uses two proportional 2/2-way valves as a basis.
- The valve regulates a pneumatic pressure to an electronically specified value. This makes use of cascaded closed-loop control of pressure/motion and current.
- Control is provided using an analogue current or voltage signal, or alternatively using a digital pattern (voltage version only) for adjustable setpoint values, or using a PWM signal (voltage version only).

Valve function

[1]	Normally closed



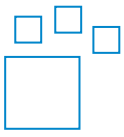
Switching input/output



Pin assignment:
Analogue:
- Pin 1: +24 V
- Pin 2: Setpoint (-)
- Pin 3: GND
- Pin 4: Setpoint value (+) / PWM
- Pin 5: Actual value output

Analogue (digital input) switchable with display variant:
- Pin 1: + 24V
- Pin 2: DI 1
- Pin 3: GND
- Pin 4: DI 0
- Pin 5: DI 2

Ordering data - modular system



Configurable product
This product and all its product options can be ordered online via the configurator.

Characteristics

Diagrams

The diagrams shown in this document are also available online. These can be used to display precise values.

Type code

001	Series	
VPPI	Proportional-pressure regulator	

002	Nominal width [mm]	
1.8	1.8	
5	5	

003	Directional control valve type	
L	In-line valve	

004	Valve function	
3	3/3-way valve, normally closed	

005	Pneumatic connection	
G18	G1/8	

006	Lower pressure value of control range	
1V	-1 bar	
0L	0 bar	
...L	... bar	

007	Upper pressure value of control range	
0H	0 bar	
1H	1 bar	
2H	2 bar	
6H	6 bar	
10H	10 bar	
12H	12 bar	
...H	... bar	

008	Setpoint input for individual valves	
A4	4 ... 20 mA	
V1	0 ... 10 V	

009	Overall accuracy	
S1	1 %	

010	Operator unit/interface	
	None	
D	Display	
BT	Bluetooth	

011	Certificate	
	None	
T	Test report	

Datasheet

General technical data									
Pressure regulation range	0 ... 1.2 MPa	-0.1 ... 0.1 MPa		-0.1 ... 0 MPa	0 ... 1 MPa	0 ... 0.2 MPa		0 ... 0.6 MPa	
Pressure regulation range	0 ... 12 bar	-1 ... 1 bar		-1 ... 0 bar	0 ... 10 bar	0 ... 2 bar		0 ... 6 bar	
Nominal size, supply	5 mm	1.8 mm	5 mm			1.8 mm	5 mm	1.8 mm	5 mm
Valve function	3-way proportional pressure regulator								
Design	Poppet valve with spring return								
Type of reset	Mechanical spring								
Dimensions (W x L x H)	42.2 mm x 95.3 mm x 94.3 mm								
Display type	TFT colour			LED	LED, TFT colour	TFT colour	LED	LED, TFT colour	
Safety instructions	Safety position VPPI, normally closed								
Display size	1.77“			–	1.77“		–	1.77“	
Display resolution	128x160 pixels			–	128x160 pixels		–	128x160 pixels	
Pneumatic connection, port 1	G1/8								
Pneumatic connection, port 2	G1/8								
Pneumatic connection, port 3	G1/8								
Standard nominal flow rate (standardised to DIN 1343)	1,630 l/min	80 l/min	150 l/min	–	1,400 l/min	150 l/min	375 l/min	280 l/min	900 l/min
Standard nominal flow rate 2-3	850 l/min	40 l/min	20 l/min		750 l/min	60 l/min	210 l/min	125 l/min	480 l/min
Sealing principle	Soft								
Flow direction	Non-reversible								
Type of actuation	Electrical								
Type of piloting	Direct								
Type of mounting	Via through-hole for M4 screw, via DIN rail								
Mounting position	Any								
Degree of protection	IP65								
Corrosion resistance class CRC [1]	2 - Moderate corrosion stress								
Product weight	370 g			365 g	365 ... 370 g	370 g	365 g	365 ... 370 g	
Max. tightening torque for fitting	8.5 Nm								
Instructions on use	The product is suitable for industrial purposes only. Measures to eliminate radio interference may be required in residential areas.								

1) More information www.festo.com/x/topic/crc

Datasheet

Electrical data		
Signal range analogue output	0 - 10 V	4 - 20 mA
Short type code	VPPI	
Operational voltage range DC	21.6 ... 27.6 V	
Nominal operating voltage DC	24 V	
Nominal current	0.15 A	
Max. current consumption	525 mA	
Max. electrical power consumption	14.5 W	
Reverse polarity protection	For all electrical connections	
Short circuit current rating	For all electrical connections	
Max. cable length	30 M	
Electrical connection 1	–	
Electrical connection 1, function	Actual value output, Setpoint input, Power supply	
Electrical connection 1, connection type	Plug	
Electrical connection 1, connector system	M12x1, A-coded to EN 61076-2-101	
Electrical connection 1, number of connections/cores	5	
Electrical connection 1, tightening torque	1.5 Nm	
Setpoint value input	0 - 10 V, Pulse-width modulation, Digital	4 - 20 mA, Pulse-width modulation, Digital
Input resistance	100 kOhm	0.3 kOhm
Switching output	Push-pull	–
Max. output current	25 mA	–
Max. load resistance current output	500 Ohm	
Max. load current of the voltage output	–	
Total accuracy	0.6%FS, 1.1%FS	

Datasheet

Operating and environmental conditions						
Pressure regulation range	-0.1 ... 0 MPa	-0.1 ... 0.1 MPa	0 ... 1 MPa	0 ... 0.2 MPa	0 ... 1.2 MPa	0 ... 0.6 MPa
Pressure regulation range	-1 ... 0 bar	-1 ... 1 bar	0 ... 10 bar	0 ... 2 bar	0 ... 12 bar	0 ... 6 bar
Inlet pressure 1	0 ... 6 bar		0 ... 13 bar	0 ... 6 bar	0 ... 13 bar	
Inlet pressure 1	0 ... 0.6 MPa		0 ... 1.3 MPa	0 ... 0.6 MPa	0 ... 1.3 MPa	
Burst pressure	40 bar					
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4], Inert gas					
Note on operating and pilot medium	Lubricated operation not possible					
Media temperature	0 ... 50°C					
Ambient temperature	0 ... 50°C					
Storage temperature	-20 ... 70°C					
Climatic category	3K3 according to EN 60721					
Relative air humidity	0 - 85%, Non-condensing					
Nominal altitude of use	< 3000 m NHN					
Sound power level	62.5 dB(A)					
Sound power level at a distance of 1 m	51.9 dB(A)					
Linearity	0.9 %FS	0.5 %FS, 0.9 %FS	0.9 %FS	0.5 %FS, 0.9 %FS	0.9 %FS	0.5 %FS, 0.9 %FS
Hysteresis	0.4 %FS	0.2 %FS, 0.4 %FS	0.4 %FS	0.2 %FS, 0.4 %FS	0.4 %FS	0.2 %FS, 0.4 %FS
Reproducibility	0.4 %FS	0.2 %FS, 0.4 %FS	0.4 %FS	0.2 %FS, 0.4 %FS	0.4 %FS	0.2 %FS, 0.4 %FS
Total accuracy	1.1%FS	0.6%FS, 1.1%FS	1.1%FS	0.6%FS, 1.1%FS	1.1%FS	0.6%FS, 1.1%FS
Temperature cooefficient	0.02 %/K					
Total leakage	5 l/h					
Approval	FCC, MIC, c UL us - Listed (Oil)	RCM, c UL us - Listed (Oil)	FCC, MIC, RCM, c UL us - Listed (Oil)		RCM, c UL us - Listed (Oil)	FCC, MIC, RCM, c UL us - Listed (Oil)
Certificate issuing authority	UL E322346					
Pollution degree	2					
Cleanroom suitability, measured according to ISO 14644-14	Class 4 according to ISO 14644-1					
KC mark	–	KC-EMV				
CE mark (see declaration of conformity) [1]	To EU EMC Directive EU-radio equipment-directive (RED) In accordance with EU RoHS Directive	To EU EMC Directive In accordance with EU RoHS Directive	To EU EMC Directive EU-radio equipment-directive (RED) In accordance with EU RoHS Directive		To EU EMC Directive In accordance with EU RoHS Directive	To EU EMC Directive EU-radio equipment-directive (RED) In accordance with EU RoHS Directive
UKCA marking (see declaration of conformity)[2]	To UK instructions for EMC To UK RoHS instructions					
Suitable for use with food [3]	See supplementary material information					
Vibration resistance	Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6					
Shock resistance	Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27					

1) For information about the area of use, see the EC declaration of conformity at: www.festo.com/catalogue/... → Support/Downloads.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

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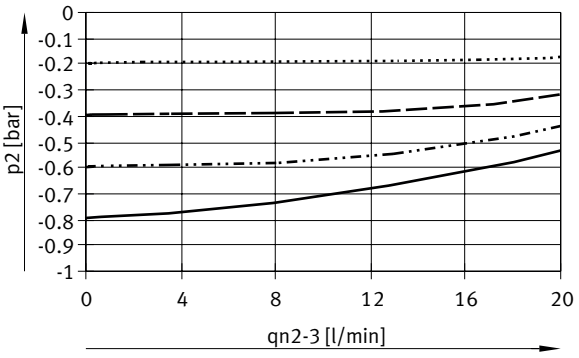
3) More information www.festo.com/catalogue/... → Support/Downloads.

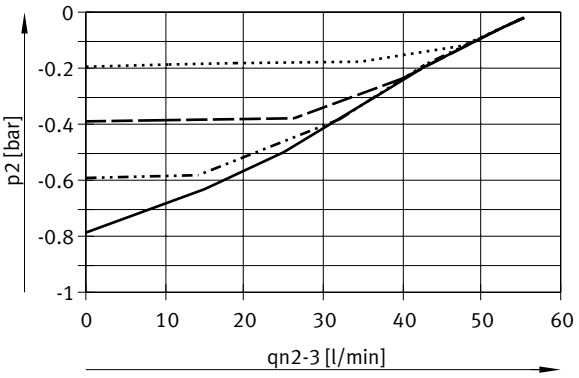
Materials	
Note on materials	RoHS compliant
Material housing	Reinforced PA
Material seals	HNBR, PTFE

Datasheet

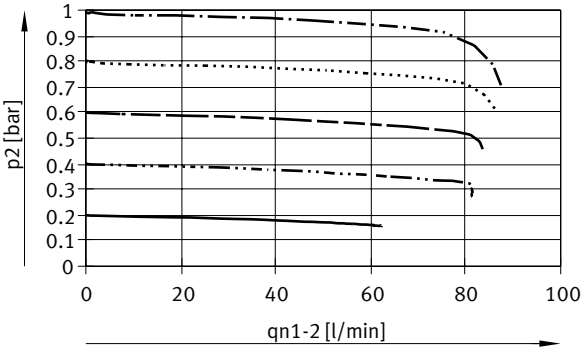
VPPI-1.8, flow rate qn for valves with pressure regulation range -1 ... 0 bar and for valves with pressure regulation range -1 ... +1 bar, flow direction 2 > 3; depending on output pressure p2



VPPI-5, flow rate qn for valves with pressure regulation range -1... 0 bar and for valves with pressure control range -1 ... +1 bar, flow direction 2 > 3; depending on the output pressure p2

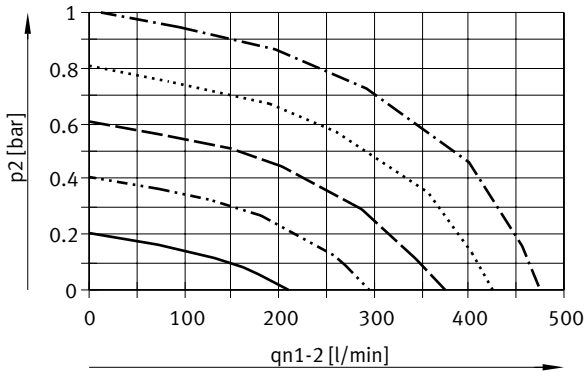


VPPI-1.8, flow rate qn for valves with pressure regulation range -1 ... +1 bar, flow direction 1 > 2; depending on output pressure p2

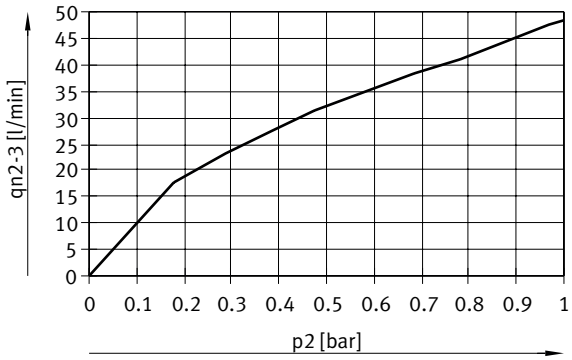


Datasheet

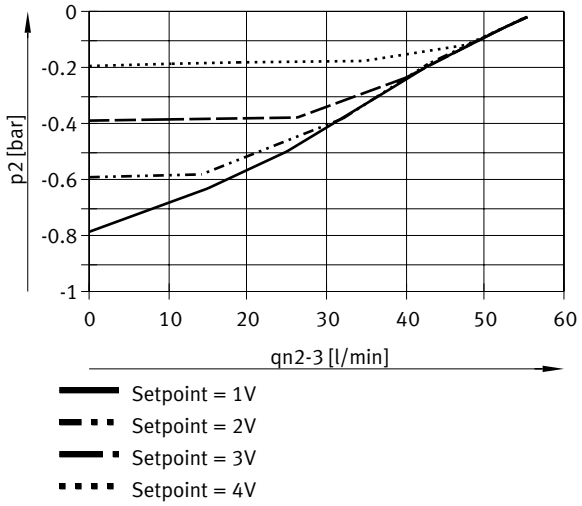
VPPI-5, flow rate qn for valves with pressure regulation range -1 ... +1 bar, flow direction 1 > 2; depending on output pressure p2



VPPI-1.8, flow rate qn for valves with pressure regulation range -1 ... +1 bar, flow direction 2 > 3; depending on output pressure p2

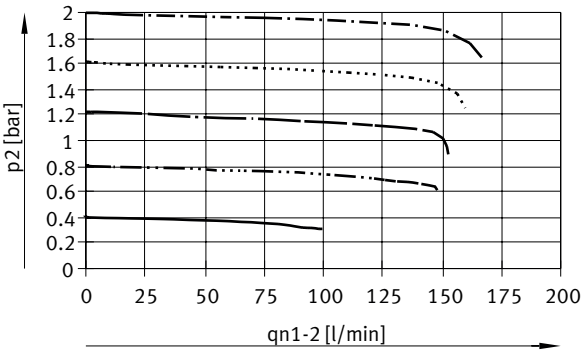


VPPI-5, flow rate qn for valves with pressure regulation range -1 ... +1 bar, flow direction 2 > 3; depending on output pressure p2

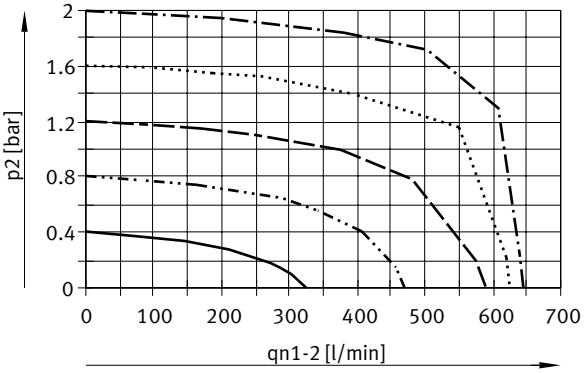


Datasheet

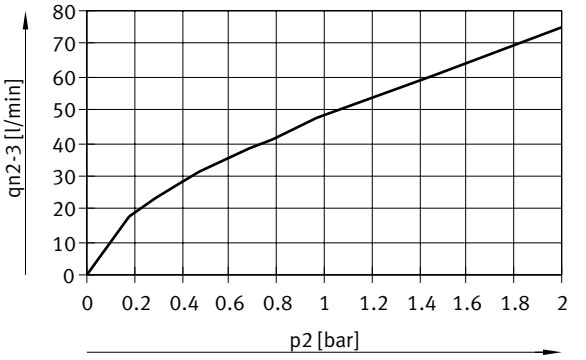
VPPI-1.8, flow rate qn for valves with pressure regulation range 0 ... 2 bar, flow direction 1 > 2; depending on output pressure p2



VPPI-5, flow rate qn for valves with pressure regulation range 0 ... 2 bar, flow direction 1 > 2; depending on output pressure p2

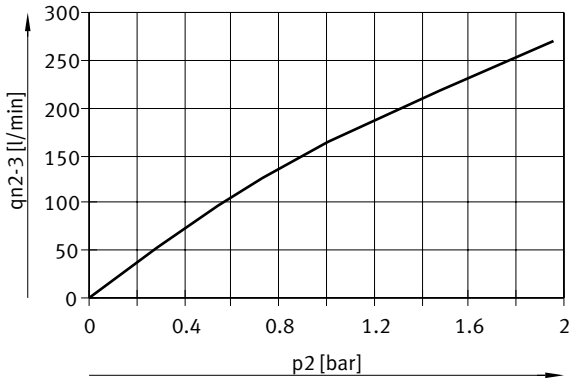


VPPI-1.8, flow rate qn for valves with pressure regulation range 0 ... 2 bar, flow direction 2 > 3; depending on output pressure p2

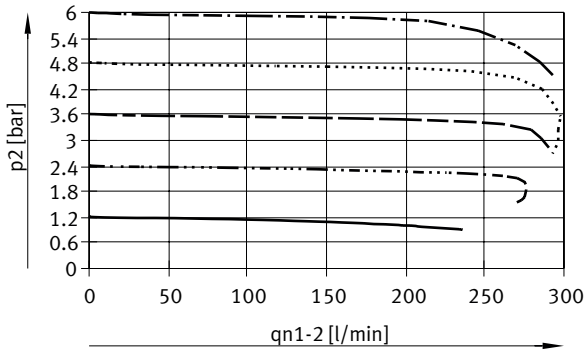


Datasheet

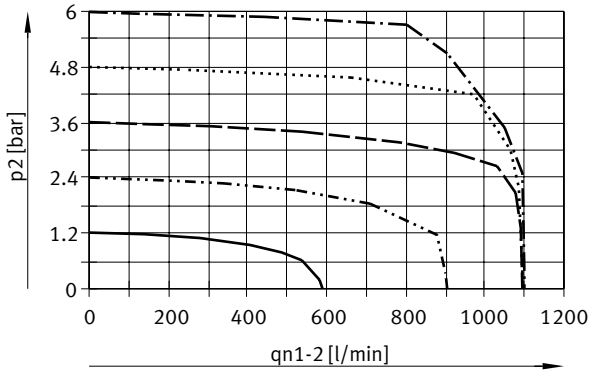
VPPI-5, flow rate qn for valves with pressure regulation range 0 ... 2 bar, flow direction 2 > 3; depending on output pressure p2



VPPI-1.8, flow rate qn for valves with pressure regulation range 0 ... 6 bar, flow direction 1 > 2; depending on output pressure p2

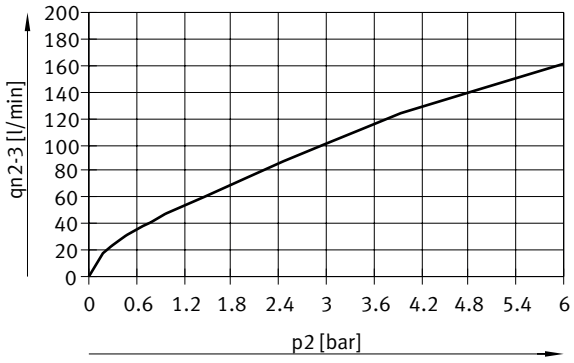


VPPI-5, flow rate qn for valves with pressure regulation range 0 ... 6 bar, flow direction 1 > 2; depending on output pressure p2



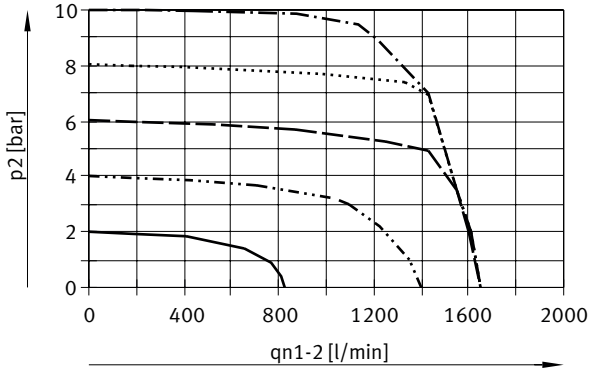
Datasheet

VPPI-1.8, flow rate qn for valves with pressure regulation range 0 ... 6 bar, flow direction 2 > 3; depending on output pressure p2



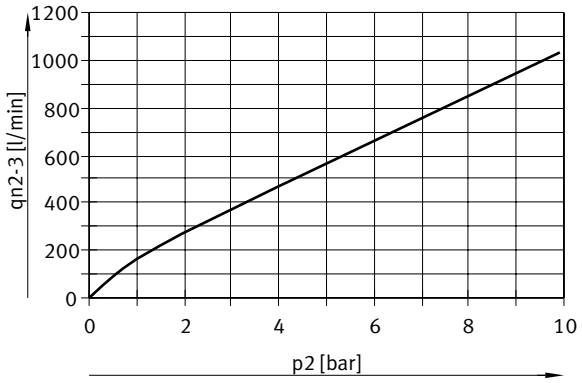
VPPI-5, flow rate qn for valves with pressure regulation range 0 ... 6 bar, flow direction 2 > 3; depending on output pressure p2

VPPI-5, flow rate qn for valves with pressure regulation range 0 ... 10 bar, flow direction 1 > 2; depending on output pressure p2

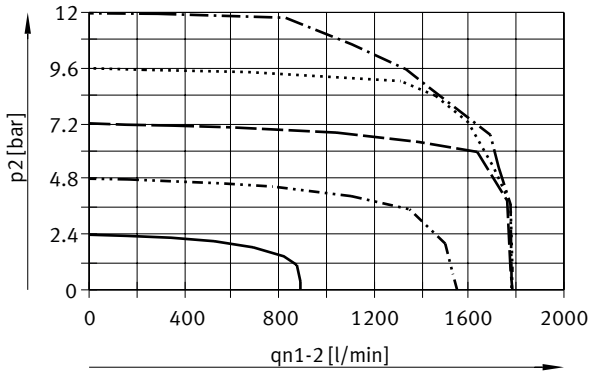


Datasheet

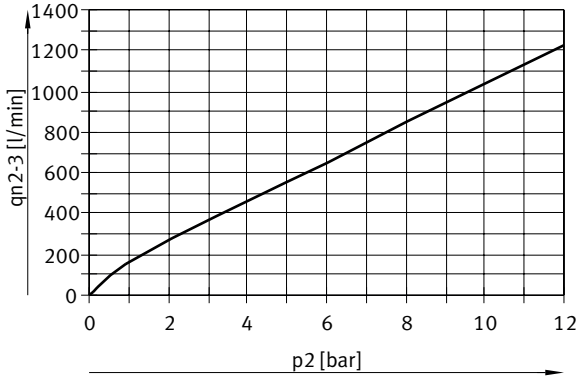
VPPI-5, flow rate qn for valves with pressure regulation range 0 ... 10 bar, flow direction 2 > 3; depending on output pressure p2



VPPI-5, flow rate qn for valves with pressure regulation range 0 ... 12 bar, flow direction 1 > 2; depending on output pressure p2

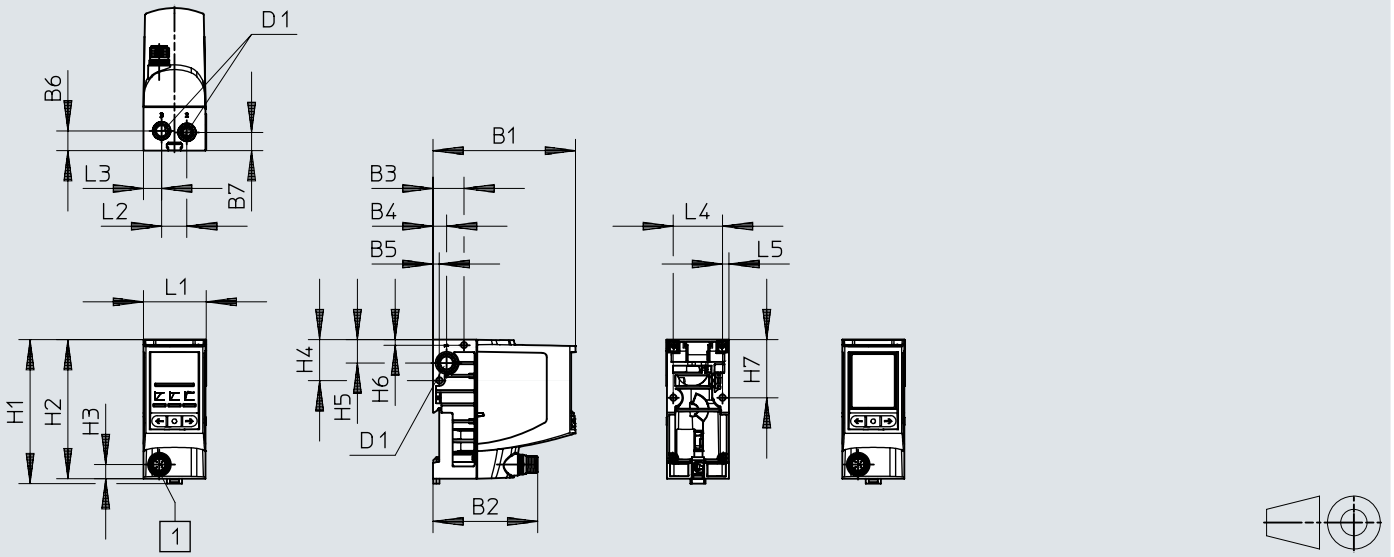


VPPI-5, flow rate qn for valves with pressure regulation range 0 ... 12 bar, flow direction 2 > 3; depending on output pressure p2



Dimensions

Dimensions – VPPI Download CAD data www.festo.com



	B1	B2	B3	B4	B5	B6	B7	D1	H1	H2	H3	H4	H5	H6	H7
VPPI	94,3	69,3	20,5	9	4,2	13	12	G1/8	95,3	92	9,3	27,1	15,5	3,7	38,5

	L1	L2	L3	L4	L5
VPPI	41,2	16,7	12	32,6	4,2

Ordering data

Ordering data, proportional-pressure regulator without display

	Pressure regulation range	Pressure regulation range	Setpoint input for individual valves	Product weight	Part no.	Type
	0 ... 0.6 MPa	0 ... 6 bar	4 ... 20 mA	365 g	**8230840**	**VPPI-1.8L-3-G18-0L6H-A4-S1**
			0 ... 10 V		**8104664**	**VPPI-5L-3-G18-0L6H-V1-S1**
					8230839	**VPPI-1.8L-3-G18-0L6H-V1-S1**
	0 ... 1 MPa	0 ... 10 bar			**8104668**	**VPPI-5L-3-G18-0L10H-V1-S1**

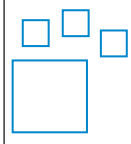
Ordering data, proportional-pressure regulator without display, with Bluetooth

	Pressure regulation range	Pressure regulation range	Setpoint input for individual valves	Product weight	Part no.	Type
	-0.1 ... 0 MPa	-1 ... 0 bar	0 ... 10 V	365 g	**8153298**	**VPPI-5L-3-G18-1V0H-V1-S1BT**
	0 ... 0.2 MPa	0 ... 2 bar			**8153295**	**VPPI-5L-3-G18-0L2H-V1-S1BT**
	0 ... 0.6 MPa	0 ... 6 bar			**8153296**	**VPPI-5L-3-G18-0L6H-V1-S1BT**
	0 ... 1 MPa	0 ... 10 bar			**8153297**	**VPPI-5L-3-G18-0L10H-V1-S1BT**

Ordering data, proportional pressure regulator with display

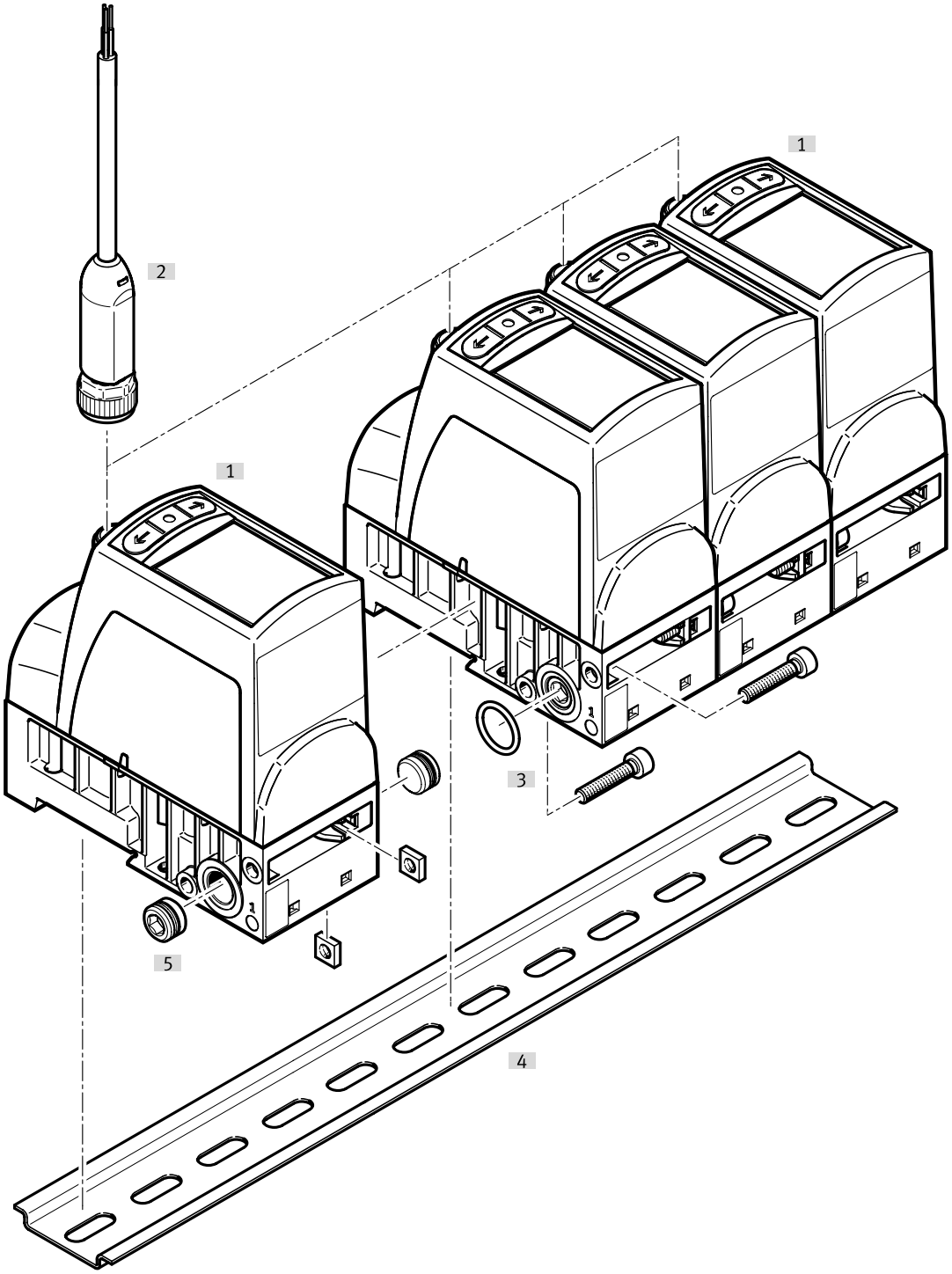
	Pressure regulation range	Pressure regulation range	Setpoint input for individual valves	Product weight	Part no.	Type
	-0.1 ... 0.1 MPa	-1 ... 1 bar	4 ... 20 mA	370 g	**8230850**	**VPPI-1.8L-3-G18-1V1H-A4-S1D**
			0 ... 10 V		**8230849**	**VPPI-1.8L-3-G18-1V1H-V1-S1D**
					8104673	**VPPI-5L-3-G18-1V1H-V1-S1D**
	0 ... 0.2 MPa	0 ... 2 bar	4 ... 20 mA		**8230852**	**VPPI-1.8L-3-G18-0L2H-A4-S1D**
			0 ... 10 V		**8230851**	**VPPI-1.8L-3-G18-0L2H-V1-S1D**
	0 ... 0.6 MPa	0 ... 6 bar	4 ... 20 mA		**8104667**	**VPPI-5L-3-G18-0L6H-A4-S1D**
					8230842	**VPPI-1.8L-3-G18-0L6H-A4-S1D**
			0 ... 10 V		**8104665**	**VPPI-5L-3-G18-0L6H-V1-S1D**
	0 ... 1 MPa	0 ... 10 bar	4 ... 20 mA		**8104670**	**VPPI-5L-3-G18-0L10H-A4-S1D**
			0 ... 10 V		**8104669**	**VPPI-5L-3-G18-0L10H-V1-S1D**
	0 ... 1.2 MPa	0 ... 12 bar			**8104672**	**VPPI-5L-3-G18-0L12H-V1-S1D**

Ordering information – Modular product system

	Pressure regulation range	Pressure regulation range	Operator unit/interface	Setpoint input for individual valves	Part no.	Type
	-0.1 ... 1.2 MPa	-1 ... 12 bar	None, Display, Bluetooth	4 ... 20 mA 0 ... 10 V	**8074287**	**VPPI-**

Peripherals

Peripherals overview



Accessories			→ Link
	Type/order code	Description	
[1]	Proportional pressure regulator	VPPI	🔗 –
[2]	Connecting cable	NEBA-M12...	17
[3]	Connecting kit	VAME-P18-K-P5	17
[4]	DIN mounting rail	NRH-35-2000	18
[5]	Blanking plug	B	17

Accessories

Connecting cable, straight

	Electrical connection 1, connection type	Electrical connection 1, cable outlet	Electrical connection 1, connector system	Cable length	Part no.	Type
	Socket	Straight	M12x1, A-coded to EN 61076-2-101	2.5 m	**8078242**	**NEBA-M12G5-U-2.5-N-LE5**
				5 m	**8078243**	**NEBA-M12G5-U-5-N-LE5**
				10 m	**8078244**	**NEBA-M12G5-U-10-N-LE5**

Connecting cable, angled

	Electrical connection 1, connection type	Electrical connection 1, cable outlet	Electrical connection 1, connector system	Cable length	Part no.	Type
	Socket	Angled	M12x1, A-coded to EN 61076-2-101	2.5 m	**8078251**	**NEBA-M12W5-U-2.5-N-LE5**
				5 m	**8078252**	**NEBA-M12W5-U-5-N-LE5**
				10 m	**8078253**	**NEBA-M12W5-U-10-N-LE5**

Inscription label holder

	Size of pack	Part no.	Type
	10	**561115**	**VMPAL-ST-AP-20**

Inscription label

	Short type code	Part no.	Type
	IBS	**18576**	**IBS-6X10**

Connecting kit, for linking several proportional-pressure regulators with a common pressure supply

	Size of pack	Part no.	Type
	5	**8108270**	**VAME-P18-K-P5**

Blanking plug

	Pneumatic connection, port 1	Size of pack	Part no.	Type
	Male thread G1/8	10	**3568**	**B-1/8**
		100	**534213**	**B-1/8-100**

Plug screw, for duct 1 of the valve for pressure zone separation

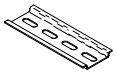
	Size of pack	Part no.	Type
	5	**8108292**	**VAME-P18-BP-G18-P5**
	10	**8108271**	**VAME-P18-BP-G18-P10**

Accessories

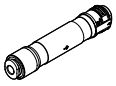
Silencer, for noise reduction at the exhaust ports

	Size of pack	Pneumatic connection	Part no.	Type
		G1/8	**2307**	**U-1/8**
	1		**161419**	**UC-1/8**
	50		**534222**	**U-1/8-50**
			534219	**UC-1/8-50**

DIN mounting rail, top-hat rail to EN 60715

	Short type code	Part no.	Type
	NRH	**35430**	**NRH-35-2000**

Inline filter

	Nominal size	Pneumatic connection	Part no.	Type
	6 mm	For tubing O.D. 6 mm	**8212640**	**OAFA-C-Q6-E-F**
			8212641	**OAFA-C-Q6-E-E**
	8 mm	For tubing O.D. 8 mm	**8212644**	**OAFA-C-Q8-E-E**
			8212643	**OAFA-C-Q8-E-F**